

(Exhibited by the Keeper of Geology.)—*Prof. H. G. Seeley, F.R.S.*: Skull of a South African saurischian (*Erythrosuchus africanus*). The remains were collected by Dr. R. Kannemeyer in 1897. They were displaced, and in unusual confusion. The matrix has been entirely removed by Mr. Richard Hall, of the British Museum, but portions are missing, so that the skull has not been reconstructed as yet. The whole skeleton indicates a new division of this order of animals.

Mr. W. Dale: A cordoned bucket or cist of bronze, "Halstatt" type, early Iron age of Europe, late Bronze age of Britain, *circa* 700 B.C., found at Weybridge, Surrey, April, 1907, at a depth of 10 feet, in sinking a shaft for the pier of a bridge close to the river at the new motor track. The bucket is of north Italian manufacture, and is similar to specimens found at Halstatt and in other parts of Europe as far as Hanover, but never before in Britain. It has quite recently been proved that some brooches, in museums and private hands, found in England, must have come from north Italy in the early Iron age of Europe. On the strength of this, it has been asserted that there was commerce between Europe and Britain as early as 700 B.C., and the theory is confirmed in a remarkable way by the discovery of this bucket. The British Museum Catalogue figures a Halstatt bucket (Fig. 30, "Guide to Early Iron Age") exactly similar. The workmanship of the handles is the same as that of the ancient torques.—*Mr. Rowland G. Hazard*: Arrow heads and spear points from North America, Egypt, and Japan.—*Sir Benjamin Stone, M.P.*: History pictures of Egypt. These views are a selection from the series of photographs taken by Sir Benjamin Stone during the recent winter season. The series of about 800 views shows the aspect of Egypt and the Soudan at the present time.

NOTES.

WE regret to learn that Dr. Alexander Buchan, F.R.S., the distinguished meteorologist, died on Monday, May 13, at seventy-eight years of age.

At the Chemical Society on Thursday, June 13, Prof. J. B. Farmer, F.R.S., will deliver a discourse entitled "Some Border-line Problems in Botany."

M. LE CHATELIER has been elected a member of the Paris Academy of Sciences in succession to the late Prof. Moissan.

THERE will be a reception at the Linnean Society on June 7 in celebration of the 200th anniversary of the birth of Linnaeus. The principal exhibits will be of objects associated with or belonging to Linnaeus, such as letters, manuscripts, and objects of natural history.

PROF. E. RAY LANKESTER has left for the Continent with the view of studying the specimens of the okapi in the museum of the Congo Free State at Tervueren, near Brussels, and in other collections.

DR. J. HALM, assistant at the Royal Observatory, Edinburgh, has been appointed first assistant at the Cape Observatory, in succession to Mr. S. S. Hough, F.R.S., who was recently promoted to succeed Sir David Gill as H.M. Astronomer at the Cape.

THE fifteenth "James Forrest" lecture of the Institution of Civil Engineers will be delivered by Dr. Francis Elgar, F.R.S., on the evening of Tuesday, June 18, his subject being "Unsolved Problems in the Design and Propulsion of Ships." The fourth engineering conference will be held on June 19-21, commencing each day at 10 a.m., and the annual conversation on the evening of June 20 at the Royal Albert Hall.

WE are informed that Prof. H. F. Osborn has returned to New York from Egypt, where he accompanied and superintended an expedition to search for remains of the

fossil vertebrates of the Fayum for the museum he represents. He took with him a staff of trained collectors, who have been left in Egypt for some time longer to continue the work of collecting. As the result of such expert collecting, a number of remains of the smaller mammals have, we believe, been obtained, which should prove of great interest.

AN interesting undertaking is that of a party now at Seattle on the way to study seismic and volcanic conditions in the Aleutian Islands. One of the fifty-nine volcanoes in these islands was reported active last March. The expedition is headed by Prof. T. A. Jaggar, of the Massachusetts Institute of Technology, and includes Prof. H. V. Gommere, of the University of California, and Dr. Van Dyke, of San Francisco.

ON May 11 the Lowell Astronomical Expedition to the Andes sailed from New York. Its main object will be the observation of Mars in July. The site for the observations will be selected next month, probably either in the high Andes of Peru or in the desert regions of northern Chili. The work is in charge of Prof. David Todd, director of the Amherst College Observatory, Mass., who will be accompanied by Mrs. Todd. Mr. E. C. Slipper, also of Amherst, will be responsible for the photographic side of the expedition, and Mr. Albert G. Ilse, of the firm of Alvan Clark and Sons, of Cambridge, Mass., will be chief mechanic and instrument maker. The appointments of the personnel of the expedition have been made by Prof. Percival Lowell, who is himself working at present at Flagstaff, Arizona.

THE Cardiff public telescope and observatory are proving a decided success. During the last few weeks, in response to an appeal from Mr. Albert Taylor, a large number of teachers in the locality have applied for permission to use the instrument. The attendance of the general public also has been such as quite to warrant the corporation in the expense to which it went in connection with the observatory.

ON Thursday next, May 23, Sir James Dewar will commence a course of three lectures at the Royal Institution on "Chemical Progress—Work of Berthelot, Mendeléeff, and Moissan." The Friday evening discourse on May 24 will be delivered by Prof. J. A. Fleming, on "Recent Contributions to Electric Wave Telegraphy," and on May 31 by Mr. A. H. Savage Landor, on "Recent Journey Across Africa."

THE Gypsy Lore Society, which was first formed in 1888, and has lain dormant since 1892, is to be revived under the presidency of Mr. David MacRitchie. On July 1 next it is proposed to issue the first number of a new series of the society's quarterly journal, the publication of which ceased with the termination of the activities of the association in 1892. The society aims at enrolling every amateur of gypsy philology, folk-lore, and ethnology, and every student of Sanskrit and Indian languages. The society will be conducted on a purely honorary basis—neither writers nor officers being paid. Interested persons should communicate with the hon. sec., Mr. R. A. Scott Macfie, 6 Hope Place, Liverpool.

THE annual report of the Ray Society, read at the annual general meeting on May 9, stated (*inter alia*) that part iii. of the "British Annelids," by Prof. W. C. McIntosh, F.R.S., is now in the press, and will be issued for the present year, and that there is a sufficient number of monographs waiting their turn for two volumes per

annum to be issued for several successive years if the funds of the society will permit. The officers and council for the ensuing year were elected, Lord Avebury being re-elected president, Dr. F. DuCane Godman, F.R.S., treasurer; and Mr. John Hopkinson, secretary. The new members of the council elected were Sir Charles Eliot, K.C.M.G., and Mr. C. D. Soar.

MR. G. R. DUNELL, whose death on Sunday last, at fifty-nine years of age, we regret to have to record, was the author of many articles and reports on engineering subjects in the columns of NATURE. For the past twenty-five years or so, Mr. Dunell's life was devoted almost entirely to literary work connected with engineering and industry; and his wide knowledge and lucid style gave his articles a distinctive character unusual in technical description. Formerly he was a frequent contributor of articles to the *Times*, but in recent years most of his work was done for *Engineering*. His last contribution to our columns appeared on April 11, and dealt with the gyroscopic apparatus for steadying ships described at the recent meeting of the Institution of Naval Architects. Mr. Dunell was a familiar figure in the engineering world, and his death will be sincerely deplored by all who knew him.

THE Catania Observatory states that at 7.40 p.m. on May 10 Stromboli burst into violent eruption, throwing masses of stone, ashes, and lava towards the eastern portion of the island, which is inhabited, and causing fires in several vineyards. The eruption was preceded by loud rumblings. Mount Etna is also in a state of activity. Large columns of thick vapour have issued from the cone of the volcano and spread over the surrounding country. On the evening of May 10 slight earthquake shocks were reported at Belpasso, Nicolosi, and Viagrande.

A SPECIAL meeting of the proprietors of the London Institution, Finsbury Circus, was held on May 8 to consider a proposed scheme of re-building, having for its objects "such an increase of revenue as would enable the committee to carry out the objects of the charter on a wider basis than at present, and at the same time to give improved accommodation to the proprietors." The scheme provides for the removal of the present lecture theatre and smoking room, thus rendering vacant 10,612 superficial feet of land, to be let on a building lease for eighty or ninety years. The alterations would include a new theatre, a storage room for 200,000 volumes, refreshment and other rooms, and the dividing of the present reference library into a reading room, small lecture room, and a committee room. The cost is estimated to be about 15,600*l*. Strong criticism of the scheme led to the adjournment of the meeting for four weeks.

THE ninetieth annual meeting of the Société Helvétique des Sciences Naturelles will be held at Fribourg on July 28-31. The first day will be devoted to preliminary matters and to a social gathering of visitors. The inaugural address will be delivered on July 29 by Prof. Musy, and afterwards Prof. Mühlberg will lecture on the subject of the supposed condition of Switzerland and neighbouring regions during the five Ice ages, interglacial periods, and the return of the last glaciation. Dr. John Briquet and Prof. Zchokke will speak on the post-Glacial immigration respectively of flora and fauna into Switzerland. The subject of the utility of an international atlas of erosion will be discussed by Prof. E. Chaix, and a lecture will be delivered by Prof. Jean Brunhes on

glacial action. The following day will be devoted to sectional meetings, and a joint meeting of the geological, botanical, and zoological sections. The centenary of Agassiz will be celebrated on the concluding day, when discourses will be delivered by Profs. de Girard and Th. Studer. The Swiss Geological, Botanical, Zoological, and Chemical Societies, and the Physical Society of Zurich, will hold their annual meetings at Fribourg on the same days.

THE twelfth annual congress of the South-Eastern Union of Scientific Societies will be held at Woolwich on June 12-15 under the presidency of Prof. Silvanus P. Thompson, F.R.S. The following papers will be read:—Goethe as a naturalist, Dr. Treutler; geology of Woolwich and district, W. Whitaker, F.R.S.; an experiment in cooperative field-work in botany, Prof. Oliver; the antiquity of *E. caballus* in Europe, with special reference to remains found in Kent, W. H. Griffin; xerophytes, Mrs. W. Plomer Young; concretionary types, forces, and evolution, G. Abbott; the storage and use of rain-water for domestic purposes, G. F. Chambers; how to make our local societies more efficient, H. Norman Gray; and local archæology, W. T. Vincent. Excursions, weather permitting, are planned to Well Hall, Eltham Palace, and Avery Park; Charlton Camp and Pits and Greenwich Park; the Royal Arsenal, R.A. Institution and Rotunda; Lessness Abbey, and Crayford Pits. There will be a reception by the Mayor (Alderman Squires, J.P.) and a congress museum. These meetings, &c., are open to members and associates of the South-Eastern Union. Mr. B. C. Polkinghorne, Woolwich Polytechnic, is the local secretary, and the hon. general secretary is the Rev. R. Ashington Bullen, Englemoor, Woking, from either of whom programmes and tickets can be obtained.

MADREFORIAN corals from the coast of French Somaliland form the subject of a paper by Mr. T. W. Vaughan published as No. 1526 of the Proceedings of the U.S. Nat. Museum (pp. 249-266). As the collection was obtained just outside the mouth of the Red Sea, it is of special interest for comparison with the coral-fauna of that sea on the one hand, and of the East African coast on the other.

"CONVERGENCE" in animals is illustrated in an article contributed by Dr. O. Rabes, of Magdeburg, to the April number of *Himmel und Erde*. An interesting figure of a rorqual-embryo with teeth is reproduced from a paper by Dr. W. Kükenthal. Among the other illustrations, exception may be taken to one which revives the myth of the flying frog, and to a second in which the Ganges dolphin is represented with a relatively huge eye.

A REVISION of the genus *Spilanthes*, prepared by Mr. A. H. Moore, is printed as vol. xlii., No. 20, of the Proceedings of the American Academy of Arts and Sciences. The genus belonging to the order Compositæ is chiefly distributed over the American continent, but also occurs in the tropical regions of the old world. The author identifies about forty species, of which twelve are new to science.

ACCORDING to a paper by Mr. J. Henderson, of which the first portion appears in vol. iv., No. 2, of the University of Colorado Studies, the land and fresh-water molluscs of Colorado have been greatly neglected by naturalists. Although the land-snails are for the most part small, water-snails and pond-mussels abound in almost every stream and piece of water, even at high elevations.

A PAPER by Dr. S. A. Forbes on the local distribution of certain Illinois fishes, forming article eight of vol. vii. of the Bulletin of the Illinois State Laboratory of Natural History at Urbana, is noteworthy on account of the seven exquisitely coloured plates of so-called "darters" (Etheostominae) with which it is illustrated. In article nine of the same series Dr. Forbes discusses from a similar point of view (that is to say, the relations of interaction between organisms and their animate and inanimate surroundings) the results of an ornithological traverse of Illinois in autumn. The predominance of European (we fail to see why they should be specially referred to as English) sparrows in certain districts and situations is very noteworthy.

THE series of "ichnites" in the geological department of the British Museum (Natural History) has just been enriched by the addition of two large slabs of Triassic sandstone from Storeton, Cheshire, displaying labyrinthodont and reptilian foot-prints. Some remarkably well-preserved casts of the foot-prints of "Chirotherium," together with other much smaller ones referred to the reptile Rhynchosaurus, and likewise others of an unknown reptile, are displayed. Both slabs are the gift of the owners of the Storeton quarries. Important additions have likewise been made to the series of exhibits illustrating the development of eels and the nature of the food of well-known food-fishes. In one jar are displayed a number of specimens from the Gulf of Messina, presented by Prof. Grassi, showing various stages in the development of the larvæ of the conger-eel and their final evolution into young congers, while alongside are shown a mass of elvers recently taken in the Severn, and a few young eels from the Thames. The fishes of which the food is illustrated are the plaice, the turbot, and the sole, the exhibits being specially instructive on account of the remarkable difference existing between the nutriment of the turbot on the one hand and that of the plaice and sole on the other. The turbot, for instance, seems to subsist entirely on other fishes, including immature clupeoids and flat-fish and sand-lance. Excepting that young sand-lance are eaten by the first and very small dabs by the second, plaice and soles, on the contrary, subsist on an invertebrate diet, including lug-worms, echinoderms, crustaceans, and tellinas and other small bivalves.

CONSIDERABLE interest attaches to a paper, by Mr. F. W. True, just issued as No. 1694 of the quarto series of Publications of the Smithsonian Institution, on an imperfect cetacean skull obtained in 1847 from the Eocene Marl of the Ashley River, near Charlestown, South Carolina. In the same year appeared a brief account of it, with plates, by Mr. M. Tuomey, who referred it to Zeuglodon, and two years later it was named *Z. pygmaeus* by Prof. J. Müller, of Berlin. Soon afterwards the specimen came under the notice of Prof. L. Agassiz, who caused a lithographed plate to be prepared, with the lettering *Phocodon holmesi*, Agass. For some reason this plate was never issued, and in 1895 Prof. E. D. Cope referred the specimen to a new genus, under the name of *Agorophius pygmaeus*. Despite the fact that the specimen, when figured in the plate made for Agassiz, had a single Squalodon-like tooth remaining in the maxilla, a suggestion was made that the species might be an ancestral form of orqual. Were this confirmed, it would have been a matter of much importance, and Mr. True has therefore been well advised in publishing the original plate. In his opinion, *Agorophius* is a squalodont,

although differing in cranial characters from *Squalodon* itself. The European so-called *Squalodon ehrlichii* of Van Beneden has, however, a broad rostrum recalling the Carolina genus, and it may be that this imperfectly known form is a connecting link between *Squalodon* proper and *Agorophius*.

SEVERAL matters referred to in the report for 1905 of Mr. M. Kelway-Bamber, a Government chemist at the Royal Botanic Gardens, Ceylon, published as vol. iii., No. 24, of the Circulars and Agricultural Journal, are of scientific as well as practical interest. The problem of establishing a connection between the mineral ingredients of the tea plant and the quality and strength of the tea is under investigation, with a prospect of obtaining definite results. From a study of the methods of preparing Oolong tea in Formosa, it is concluded that the quality and characteristics are due to an aroma produced by faint oxidation in drying and a slight scorching during roasting of the leaf, as well as to the mild decomposition caused by a fungus, and it is suggested that the fungus acting on the legumin in the leaf produces flavouring bodies similar to the action of moulds in cheese. The report also contains hints on the distillation of camphor and citronella oil.

AN article in the *West Indian Bulletin*, vol. vii., No. 4, deals with the manufacture of citrate of lime, as an article for export to take the place of concentrated lime juice. The project was brought to the notice of planters in the West Indies by Dr. F. Watts, who has published information on the production of citrate of lime in Sicily, and given public demonstrations on the process of manufacture. The commercial outcome is seen in the shipments first made from Dominica in 1906, and also from Montserrat. In the same number Mr. W. R. Buttenshaw compiles some facts on the distribution of plants from the various botanic stations in the West Indies to indicate the valuable service rendered in this connection. Incidentally he refers to the popular practice of observing Arbor Day, and mentions that palms, principally the cabbage palm, *Oreodoxa oleracea*, and the royal palm, *Oreodoxa regia*, are commonly chosen for planting, often, too, the mahogany or the white wood, *Bucida Buceras*.

THE principal article in the last issue (No. 4) of the Kew Bulletin, contributed by Mr. J. S. Gamble, treats of the gutta-percha trees in the Malay Peninsula. After reviewing the species belonging to eight genera of the Sapotaceæ found in Malaya, the author concludes that the only important tree is *Palaquium Gulta*, known as "Taban Merah," with its variety oblongifolium, "Taban Sutra"; three other species, *Palaquium Oxleyanum*, *Palaquium obovatum*, and *Payena Leerii*, afford a second-rate gutta, and cultivation is being restricted to these four species. The lists of new plants from the herbarium comprise a decade of orchids, mostly from Asia, determined by Mr. A. N. Rolfe, and exotic fungi from India and elsewhere, identified by Mr. G. Masee. Supplementing the information given in the first two numbers of the Bulletin for this year, Mr. T. A. Sprague confirms the distinction between *Dubouzetia* and *Tricuspidaria*, and offers a revision of the former genus.

THE second part of the nineteenth volume of the Proceedings of the Royal Society of Victoria contains some interesting papers on the biology and geology of Australia. It begins with the eighth of Mr. Frederick Chapman's valuable "Additions to the Palæontology of Victoria"; in this number he describes some interesting new Silurian ophiurids. He also describes a new Cypridina

from Hobson's Bay. Mr. J. A. Leach directs attention to the value of surface tension in the formation of canyons, a factor hitherto neglected. There is also a contribution to the flora of Australia, describing new or little-known plants, by Prof. A. J. Ewart, who holds the double appointment of the new chair of botany at Melbourne University and botanist to the Government of Victoria.

In the Records of the Geological Survey of India (vol. xxxiv., part iv.) Mr. R. R. Simpson describes the Jaipur and Nazira coalfields, Upper Ganges. The measures are of Middle Tertiary age and the coals closely resemble in appearance those from the Makum area, but they are somewhat inferior in quality. They burn readily, with considerable flame and great heat. The amount of workable coal exceeds 20 million tons in the Jaipur field and 35 million tons in the Nazira field. The Dikhu River area is the most suitable for the establishment of a colliery. The accompanying view on the Dikhu River, with the Bor Jan landslip in the background, shows the nature of the ground, which is covered by virgin forest with a dense thorny undergrowth presenting the maximum of

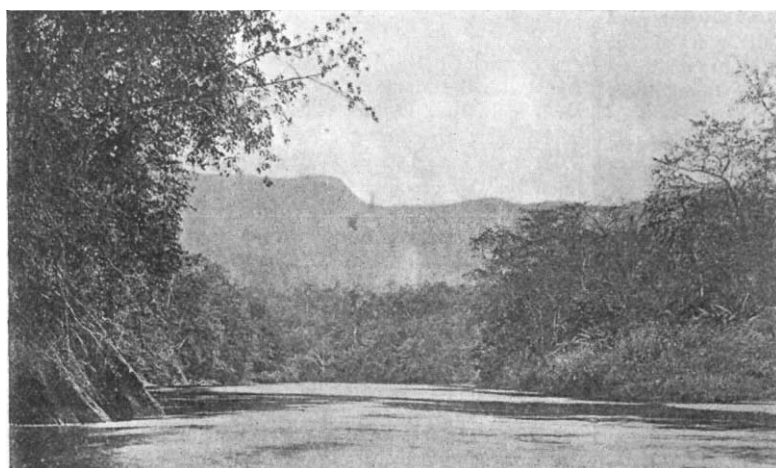


Photo.

[R. R. Simpson.]

View on Dikhu River; the Bor Jan landslip in the background.

difficulty to penetration. The difficulties of transport could probably be overcome by means of an aerial wire-rope tramway. Mr. Simpson also has a note on the Makum coalfield between the Tirap and Namdang streams. Other papers in the same issue are on the Kabat anticline near Seiktein, Upper Burma; on the asymmetry of the Yenangyat-Singu anticline, Upper Burma; and on the northern part of the Gwegyo anticline, Upper Burma, by Mr. E. H. Pascoe; and on *Breynia multituberculata*, an undescribed species from the Nari of Baluchistan and Sind, by Mr. E. Vredenburg.

DR. EREDIA, assistant in the Meteorological Office at Rome, has undertaken a laborious and useful work in discussing the frequency of wind direction in various parts of Italy from the observations contained in the Annals of that office. Part i. refers to the winds of Piedmont, and deals with monthly and seasonal values for various stations. Speaking very generally, winds from the south-west quadrant predominate in winter, while in summer they are south-westerly in Upper, and north-easterly and south-easterly in Lower Piedmont; in spring and autumn no very marked predominance is exhibited.

In the Bulletin of the Moscow Imperial Society of Naturalists, Nos. 1 and 2, 1906, Dr. E. Leyst completes his valuable series of statistical investigations of optical phenomena. The results deduced from observations at seventy stations, and including in the aggregate 1308 years, show that the phenomena have a yearly and secular range, and that solar coronæ are observed about five times less frequently than lunar coronæ; the maximum of the yearly range occurs in spring, and the minimum about July. The coronæ are seen more frequently inland than near the sea coast.

At the request of the seventh International Geographical Congress, the Danish Meteorological Institute has for some years past published in its year-book of nautical meteorology valuable details, accompanied by monthly maps (April-August), of the state of the ice, compiled from logs of ships and other sources. The summary for 1906 shows that, as the winter 1905-6 was comparatively mild over Spitsbergen, Barents Sea, and the Kara Sea, and severe over Greenland and parts of Arctic America, the conditions of the ice were consequently favourable in the former region and unfavourable in the latter; in Barents Sea the conditions were especially favourable, while in the Greenland Sea the ice-belt was broader, and off Labrador drift-ice was more frequent, than usual. All things considered, it is expected that the conditions in 1907 will be rather favourable along the coasts of Greenland, and less so around Labrador and Newfoundland. The most important events of the year in the Arctic regions were the accomplishment of the North-West Passage by Captain Amundsen and the attainment of latitude 87° 6' N. by Commander Peary.

THE revised edition of the Institution of Electrical Engineers Wiring Rules, which has been recently issued, contains a good many alterations and a great deal of rearrangement. The rules apply only for voltages up to 250 volts, the Board of Trade rules being approved and used for the higher pressures. The standard for copper conductors is now that of the Electrical Standards Committee instead of Mathiessen's standard, as in the past. Insulation tests are also modified in that the "bending" test has been omitted, though an increase in the length of time for which the pressure test is applied takes its place. This is a distinct advance, as the danger of mechanical rupture was always present when bending cables of any size, and was in very many cases an unnecessary strain on the cable. Bare conductors also are allowed under special conditions. Switches of more than 5 amperes at 125 volts when placed in cases are to have their cases lined with asbestos. Dynamos and motors are now placed under separate headings, but transformers are no longer kept separate, being under a combined heading with resistances and choking coils. At the end of the rules the Electrical Standards Committee's standard for the resistance and weights of copper conductors is defined as follows:—"A wire one metre long and weighing one gramme having a resistance of 0.1539 E.S.C. standard ohms at 60° F." In addition to the Board of Trade rules for voltages from 250 volts to 650 volts, the Home Office

Regulations for Mining Work are also attached. The revised rules are certainly an improvement on the previous edition, and the rearrangement and enlargement under the different headings tend to simplify them greatly.

THE May issue of the *Westminster Review* contains an appreciative unsigned article on the life and work of the late Prof. Marcellin Berthelot. This biographical notice, in addition to its references to Berthelot's achievements in science, provides much interesting information concerning his private life and his services to France in administrative matters.

OUR ASTRONOMICAL COLUMN.

A NEBULOUS BACKGROUND IN TAURUS.—In No. 3, vol. xxv. (p. 218, April), of the *Astrophysical Journal*, Prof. Barnard discusses the apparently nebulous background shown on some excellent photographs of a region in the constellation Taurus, of which two reproductions are given.

The vacant lanes among the Milky Way stars in Ophiuchus suggest from their appearance that not only are they due to the absence of stars, but that they are really darker than the rest of the sky, that is, they are probably channels in a substratum of nebulous matter. The recent photographs obtained by Prof. Barnard show that lanes of this nature are undoubtedly in a substratum of some kind, and not merely a subjective effect of contrast in a region otherwise densely packed with stars.

The region dealt with is comprised between the limits $\alpha = 4^{\text{h.}} 0^{\text{m.}}$ to $4^{\text{h.}} 34^{\text{m.}}$ and $\delta = +24^{\circ}$ to $28\frac{1}{2}^{\circ}$, well to the east of the Pleiades, and shows numerous narrow, vacant lanes, one of which is singularly well defined, and extends for some 26m. in R.A. Another feature is a large space, nearly devoid of stars, but containing a large nebula which seems to suggest the possible existence of a larger nebula of which the outlying portions are dead or non-luminous, and therefore absorb the light of the stars behind them.

THE WHITE SPOT ON JUPITER'S THIRD SATELLITE.—Referring to the white spot near the north limb of Jupiter's third satellite, observed by Senor José Comas Solá in November, 1906 (see *NATURE*, No. 1942, p. 281, January 17), Prof. Barnard directs attention to the fact that he observed the same, or a similar, spot some fourteen years ago, and that, as in Senor Solá's observations, it was only seen when the satellite was following Jupiter. This leads to the assumption that this feature cannot be a true polar cap in the sense of its being at the pole, or it would be seen with equal facility in all parts of the satellite's orbit. Further, if this white spot is an extrapolar marking, and is only visible in certain points of the satellite's orbit with respect to the earth, it indicates that Jupiter's third moon, like the earth's satellite, always keeps the same face towards its primary.

During the observations of 1893-4, Prof. Barnard saw a similar spot at the south limb of the fourth satellite when that body was near superior conjunction (*Astronomische Nachrichten*, No. 4173, p. 327, April 27).

THE METEORITE FROM RICH MOUNTAIN, NORTH CAROLINA.—The results of a minute examination of a portion of the meteorite which was seen to fall at Rich Mountain, Jackson County, North Carolina, "about June 20, 1903, at 2 o'clock in the day," are given by Messrs. Merrill and Tassin in an abstract (No. 1524) from the Proceedings of the U.S. National Museum (vol. xxxii., pp. 241-244, April 18).

The portion examined seemed to be the nose of a larger mass, and weighed 668 grams. Metallic iron particles project from the crust, and seem to have resisted the frictional heat of the atmosphere better than did the silicate portions. Chemical analysis showed about 7 per cent. of iron, nearly 47 per cent. of olivine, about 4 per cent. of troilite, and about 40.7 per cent. of insoluble silicates. Copper was apparently absent, and, among the compounds, chromite was not found, whilst a relatively large amount of graphitic carbon was present.

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COMET 1907b (MELLISH).—In No. 4174 (p. 347, May 3) of the *Astronomische Nachrichten*, Prof. Berberich directs attention to the great similarity between the elements of the orbit of comet 1907b and those of the bright comet of 1742 as published in vol. clxxii. (p. 105) of the same journal.

Prof. Barnard has discovered an image of this comet on a plate taken on April 13, the day before the object was found by Mr. Mellish, and a number of other American observations are also recorded for April 14, 15, and 17 in the same journal.

THE ORBITS OF FOUR DOUBLE STARS.—Recently determined orbits of the systems of ξ Scorpii, Σ 2173, Σ 3121, and μ^2 Herculis are given by Dr. Doberck in Nos. 4169-70 (p. 257, April 17) of the *Astronomische Nachrichten*. The orbits were determined by successive corrections by the least-square method, and the computed places are compared with all the available observational results; ephemerides extending to 1926 are also given. The periods given by the final elements for each of the above stars are 45.12, 46.20, 35.38, and 44.20 years respectively.

THE DISCOVERY OF VARIABLE STARS.—The value of the new method of discovering, photographically, variable stars, by superposing a negative and a positive copy of a similar negative taken at a different epoch, is illustrated in Circular No. 127 of the Harvard College Observatory. A plan has been started whereby the whole of the sky, as photographed on the Harvard Map of the Sky, will be systematically examined for variables, and the present circular deals with two regions already examined by Miss Leavitt; eight new variables were found in the one region and six in the other. A comparison of the results with those previously obtained shows that apparently all the bright variables exhibiting conspicuous changes in these two regions have now been discovered.

THE RADIANT POINT OF THE BIELIDS.—From observations made at Stockholm in November, 1904, Dr. Karl Böhlín finds the radiant point of the Bielid shower, epoch November 21.33 (M.E.T.), to have been $\alpha = +26^{\circ} 2'$, $\delta = +44^{\circ} 10'$ (1900). The record of the observations and discussion of the results appear with a chart, in No. 2, vol. viii., of the *Astronomiska Iakttagelser och Undersökningar å Stockholms Observatorium*.

IRON AND STEEL INSTITUTE.

THE annual meeting of the Iron and Steel Institute was held at the Institution of Civil Engineers, Westminster, on May 9 and 10. The proceedings opened with the Right Hon. Sir James Watson, Bart., M.P., past-president, in the chair who explained that the president, Mr. R. A. Haggard, having attended to present an address on behalf of the Institute at the dedication of the building given by Mr. Carnegie to American engineering societies, was unable to return to England in time for the meeting.

The report of the council, which was read by the secretary, Mr. Bennett H. Brough, showed that the past year had been one of exceptional activity and progress. The membership of the institute amounted to 2052, and the joint meeting with the American Institute of Mining Engineers resulted in the presentation of so large a number of papers that it was found impossible to compress the minutes into the usual two volumes, and two extra volumes were issued. The report by the treasurer, Mr. W. H. Bleckly, showed that the financial prosperity of the institute is a matter for congratulation. The receipts amounted to 6610*l.*, and the expenditure to 5915*l.*

The first act of the new president, Sir Hugh Bell, Bart., on taking the chair was to present the Bessemer gold medal to Mr. J. A. Brinell, the eminent Swedish metallurgist.

In his presidential address, Sir Hugh Bell gave a sketch of the iron trade in the last hundred years, the subject being chosen from the fact that the life of his father, Sir Lowthian Bell, begun in 1816 and ended nearly ninety years later, almost covered the period reviewed. The address is a work of conspicuous literary merit, and its value is enhanced by the addition of a carefully compiled chronological table of the more important events con-